mental health digest
National Clearinghouse for Mental Health Information, Vol. 4, No. 9, September 1972

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cover story

The two children depicted on the cover are communicating in a way that the use of words struggles to achieve. The silk screen print reproduced on the cover was done by Mary Reyner while a student in the St. Alban's Parish Summer Program, Washington, D.C.

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Guest Editor's Comment

Knowledge of what constitutes appropriate and effective communication is necessary in the pursuit of good mental health, whether it be through social action, psychotherapy, or research, and whether it be in the classroom, the office, the Congress, or the laboratory. The psychotherapist's concern with his patient's expression of meaningful affect, the autistic child's severe language deficits, the sophisticated psycholinguistic studies, the lobbying efforts of groups interested in the mental health of children are examples of the broad interface of communication and mental health.

There is a need for increased, relevant dialog between those concerned with mental health and those concerned with the more basic aspects of communicative skill. The profound importance of communication processes is seen in the consideration of children whose major work during the formative years is the development of the need to communicate. A child whose efforts are thwarted becomes a prime candidate for mental disorder, alienation, and "acting out" behavior. At all levels of interpersonal and intrapersonal organization the consequences of defective communication are obvious either through directly observable phenomena or derivative behavior.

This issue of the *Mental Health Digest* provides an overview of the mental health-communication interface. A deliberate attempt has been made to deal with global issues of a practical and theoretical nature, and then focus on the vicissitudes of individual communication as reflected in articles drawn from the current literature. It is significant that a number of articles relate to children and to their acquisition and use of the tools of communication. As much as we attempt to teach children about communicating, we can learn much about communication from our work with them.

Myron L. Belfer, M.D.

Child Psychiatry and the Legislative Process

The child psychiatrist often is perplexed by the legislative process. The ponderous structure of laws, regulations, guidelines, standards, and lobbies which so intimately influence clinical works seems at times to exist mainly to confound him. His feelings are contradictory as well as ambiguous. He is actually sensitive to the need to become involved in shaping legislation, yet at the same time he is fairly easily diverted from such action by the familiar assumptions that he is too busy, and that such activity somehow carries with it the taint of partisan politics.

The legislator obviously experiences a like bewilderment when confronted with the multiple, competing interests of the vast mental health field. His responsibility to his constituents is obscured by a maze of conflicting information.

In an effort to sort out and begin to solve some of these problems, panel discussions were held at the Annual Meeting of the Academy of Child Psychiatry in Denver in October, 1970. Entitled "Implementation of Recommendations for Legislation on the Mental Health of Children: How Can the Voice of Child Psychiatry Be More Effective?", the discussions brought together Academy members, legislators, and intermediary health agency officials. Three panels were held concurrently. Each panel was composed of one or more child psychiatrists, legislators, and health agency officials.

Certain conclusions can be seen as emerging almost unanimously from the dialogs:

1. A commitment to the individual child must be the primary concern underlying all mental health service to children and its legislation.

2. The child phychiatrists, in fulfilling this commitment, must become actively involved in the legislative process, both individually and in groups.

3. To facilitate this involvement, it is probably necessary to develop legitimate lobbying capacities.

4. Three separate "arenas" exist whose workings must be understood: the governmental, the medical, and the media.

5. It is the responsibility of the medical "arena" to reach a consensus in order to present coordinated and comprehensive information to the governmental and media worlds.

Highlights of Panel Discussions

We're at the beginning of a new era, a return of professional people to a responsible involvement with social issues and public policy. We somehow had an attitude that politics involved no vested interest of professional people. Over the years there has been more realization that in order to move our programs and apply knowledge, we have to be involved in the social process and influence public policy. The Academy has taken the position that we are an organization that can and will become the national voice of child psychiatry. We therefore must become more familiar with what makes something work in a democratic system. Our problem is how to keep in mind, simultaneously, the national, regional, State, local, and neighborhood levels, and not to have to rediscover all over again what has already been discovered.

Large numbers of children in this country who need public health are receiving that which is fragmented, unbalanced, and discontinuous de-

spite all our rich resources in medical technology and professional skills. The organization of the child-care system is hopelessly outmoded. We must have change. The voice of child psychiatry must enter the marketplace with proposed solutions to this present nonsystem of child-care delivery. It must put itself on the line. It has responsibility to do this in the public interest. And our voice can be more effective if we come to terms with our doubts, which seem to be fourfold: Why state the problem if you can't state the solution? Why espouse a solution if you're not sure your colleagues will agree with you? If your colleagues agree with your solution and you try to accomplish it, doesn't that raise the specter of intervention? Why waste time on intervention when the outcome is unclear? After all, we're busy professionals, and fiercely individualistic.

The professional offers an expertise that the legislature, in order to be informed, needs. Because the professional is unattached, politically, he can involve himself in political action, individually and through his organizations. It's not enough to say, "There are lots of problems with children that need help." There has to be some demonstration of this need which can stand up against the demonstrated need other groups present for the causes they have. Doctors have to learn how to work for the child with other people who have other ideas.

A great many myths exist about politics. A good characterization of the average legislator and the average professional would go something like this. The professional thinks of the politician as kind of a rugged, boorish fellow who doesn't particularly have any idealism and doesn't really know anything about the subject matter the professional's interested in. The politician thinks of most professionals as nice, warm, and compassionate, but kind of foolish and naive people who want to give away lots of money without a good deal of responsibility about it. They are not really good portraits. When you look at the political scene, you'll find a completely different kind of reality.

The closest people to your profession are the legislators because essentially they're in the same business, the people business. Professional people have erroneous preconceptions about legislators and vice versa. Many legislators don't realize psychiatrists are physicians, part of the medical tradition, or that they have any interest in social issues and social process as such. There's also a great ignorance on our part about legislators and the legislative process.

The essential issue in developing ideas is communicating with the legislative process, and to do this it is necessary to identify with two principles. One is mutual trust, the assumption that the people in legislative bodies are interested in the same things you are. The second is mutual respect, your understanding of their way of going about something and theirs of your way of going about it.

One of the first things to overcome is the distance between representatives and their constituents. The representatives are not always good at this, and we certainly aren't. The professional politician wants "input" from representative, responsible people to help him in the decisionmaking process. The task of the legislator is often very lonely and awesome, and he is very responsive and eagerly welcomes input he can depend upon.

Enlightened legislators are very concerned with having images that are activist ones. They like to see their

names sponsoring bills and engineering major legislation. They are so inundated with material that it is really your role to aggressively seek them out in a coordinated fashion. Most legislators start out as generalists. Later, either by necessity or chance, they tend to spend a greater and greater amount of their time in a more specialized field, and this is good.

The political process is basically one which deals with relationships between people. If the people want something, the legislator is going to want it, too. It's fundamental in the American pluralistic system that the legislator ultimately produces what it is the people want.

In talking about implementation, the first thing is to realize that politics is an ancient and honorable profession. It's very important for us all to break down the barrier that politics is something to be shunned. It's very important for us to realize that politics are vital to us if the things in which we believe and for which we are fighting are ever going to be realized.

Very few citizens' groups or professional groups really know in depth a piece of legislation, a law, or a bill that's going through. What is needed nationally is somebody who has the time, the leisure, or the obligation to know the material and know it in depth. Somebody at the State or district level knows the issues and knows them right down the line.

We must somehow help our citizens realize that the development of children and youth in our society is a public utility and a public trust. We must find ways and means of influencing government legislation and the vehicles for carrying out the job, in the direction of viewing how kids grow and develop, with as much fervor as when we are concerned about the air and the streams being polluted. When we talk about the development of a child or an adolescent, we begin to see that it's the integration of health, education, and welfare which makes up the sum total of how he or she is developing. Lastly, all services provided for children must move in the direction of becoming developmentally based, health-oriented, rather than the disease- and pathology-oriented model we have had for our services. We have to convince legislators that children's problems must be given a priority.

Emphasis in the area of prevention and development of mentally healthy children is supported. There's a certain disillusionment with the rehabilitative ideal. Too much of the dollar—and there are not enough dollars—is spent for treatment and patching up. If we're ever to become a rational society, a mentally healthy society, we must attack conditions which create mental illness. It's time we pushed at national, State, local, and even neighborhood levels.

Our voice can be more effective if we reach a consensus with our colleagues and collaborate with other organizations that have mutual interests and concerns. We must determine what the consensus solution is and then move forward. A simple national platform of agreed-upon goals is much needed at this time.

If we're going to have a consortium, a consensus, a coalition rather than conflict, we will have to give up some power. And we ought not to be worried about giving up power if we have any area of competence. If we keep studying sick children and well children and keep refining our understanding of the

diagnostic process and the treatment process, we can share the power.

There's a risk in shift of power, but an even greater risk if there isn't some shift. This is necessary if we are to provide a concerted effort instead of the deficiency of organization that has characterized our past. The question we're asking today is how do you shift without losing what's excellent and needs to be supported and elaborated? Although it is costly in time, the necessity of talking together and of being in touch with each other is amply demonstrated by this discussion.

We have a lot of pieces that must be put together. Development of continuing services at the local level is most important. There is a tremendous vacuum, and obviously the priorities are many. How can we start pinpointing some coordination of services? The State of Connecticut, for example, has 12 planning councils throughout the State. Each one of these planning councils has a children's committee. Advocacy is right there, built into a system which already exists. How do we plug this in without creating another bureaucracy that we have to fight? Perhaps the Academy could take this up with other national organizations—a complete review of all laws which pertain to children's services.

Summary

A blueprint for involvement and action at the Federal level was presented. It was emphasized that child psychiatry must speak out publicly, must agree on its programs, and must develop a national policy as a base for recommendations and actions. The need for better communication between psychiatrists and legislators, for more effective lobbying, and for doctors making themselves more available to the legislators was stressed. Some practical points were made on how to be effective with legislators, among which was the fact that at certain times it was important to offer the legislators direct help for his problems and not just continue to ask his help for our own problems. The need to become political was pointed out; individuals can be partisan, but in our organizations, we have to be nonpartisan. Panelists were helpful in telling ways to become more effective, ways that are fairly simple but that perhaps have been avoided in the past because of unwarranted fears. It was emphasized that the academy's special interests must be advanced; there's nothing wrong with special interests, but the group also has to be willing to compromise, to work with other organizations toward the greater and long-term goal of the good of children. It needs to seek lobbying help to become involved in the public sector of child care which will have an effect no matter what the diverse interests are. Above all, psychiatrists should start communicating with legislators and should be open and honest and communicate with them even before a problem arises.

Condensed from a Report of a Panel Discussion at the Annual Meeting of the American Academy of Child Psychiatry, Denver, Colo., October 18, 1970.

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Applications of Communication Theory: The Substructure of Science

William Stephenson

Subjective aspects of science have been seriously underestimated in the past. Although recent attempts to interpret the nature of science have done something to redress this, the concern, in particular, has been with long-range influences, with epoch paradigms, and not with the here-and-now subjectivity of the physical sciences.

It is axiomatic that while "objective" and "subjective" involve a simple methodological caveat, objective measurements and observations can, in principle, be made by everyone (or by a piece of apparatus), whereas measurements and observations of a person's subjectivity can be made only by himself. The importance of this axiom has never been properly appreciated—perhaps because of complete ignorance on the part of most scholars about methodological matters.

Human communication is functional. We say that grass is green and crows black: It should be said, instead, that grass is "greening" and crows "blacking," to remind us of the multitudinous functional conditions under which objects are observed —grass is many hues from brown to blue, and crows are many shades of gray, with lustrous sheen and irridescent glosses to add to all else, depending on interactional conditions.

So regarded, functional communication has two forms. One relates to objectivity: Its concern is with conditions of change in the outer world—this may be called *communication-pain*. The other has reference to subjectivity, and it is not enough to say that it involves change "inside the mind"—instead, its concern is with *communication-pleasure*.

Scientific information is derived characteristically from experiments in which events are classified beforehand and measurements are subsequently made to test them. This is the case for the hypothetico-deductive method.

It involves, however, many presuppositions and values which rarely surface in scientific papers. There is a wish behind it to *explain* rather than to *understand* events, and principles of honest Calvinistic goodness and worth support it. The commitment to it, indeed, is so strong that intolerance of any other paradigm characterizes the strict constructivist; in many fields, especially the social-psychological, it determines what will be selected as objects of study, how findings will be evaluated, and what criticism will be permitted, rather than what may be significant for science as such.

Another concern is to indicate that subjective process enters largely into information theory as this is broadly conceived. One is concerned with finding one item of information from large numbers of them, the other with arriving systematically at one unit of information in the first place. There is in addition a broad area of concern about the practices of scientists vis-à-vis publications, meetings, and the like.

Scientists have to try to keep abreast of current knowledge and to make assessments as to its reliability and credibility. A review of literature indicates that more than 30,000 scientists and technologists here and in

Britain have been interviewed during the past 2 decades in pursuit of problems confronting scientists in such respects. The general purpose in these surveys has been to seek lawfulness in an objective framework, oblivious for the main part of subjective influences.

Scientists and technologists rely upon interpersonal avenues of flow rather than upon the old-time formalities of definitive papers. The *modus operandi* of information flow is increasingly a matter of long-distance telephoning, conferences, site visits, etc. Much current information is a chaotic mass of symposium discussions, departmental bulletins, government reports, preprints, informal papers, etc., very different in place and quality from the orderly papers which find their way into well-regulated scientific journals.

The American Psychological Association's pioneer studies on information flow in psychology show that unrestricted travel correlates highly with scientific productivity and efficiency, and unlimited telephoning with greater use of information, at least among biochemists. Payment of expenses to conferences is not, apparently, a strong correlate of either productivity or of efficiency; the use of paid consultants is contraindicated—it correlates negatively with scientific output.

Flow conditions seem to differ from country to country, sample to sample, subgroup to subgroup, person to person. It is possible, however, that one should expect just such variability because of the strong subjective elements and different values involved; the only regularity might well be irregularity—flow conditions may vary in different circumstances, different countries, samples, subgroups, and from person to person. If scientists in a subgroup are examined for the communication subtending their work in subjective respects, it is easy to show quite different value-systems are at issue among them. In short, it is easy to prove that distinctly different value-systems are at issue and that any search for lawfulness that is not cognizant of these differences is unlikely to get very far.

There are many studies pointing to vicissitude and variety in scientific work, related more to fads and fancies than to "safe and sound" conclusions. These are all highly subjective at their roots. Scientists place great store upon prestige, fame, and "fair play"; eponymy is highly valued and fads and fashions seem to be almost as common in science as they are in the marketplace. There are many "playful" activities in science. Discoveries come as much from idle browsing in library stacks as from deliberate thinking or research. Such browsing involves a certain pleasure in *not* doing work, in *not* being rational, deliberate, or "really scientific."

Attention is drawn to the fact that though information is growing at an exponential rate, its decay is just as dramatic. The conditions of its growth, but not of its decay, are understood.

With few exceptions the flow studies considered have practical rather than theoretical bearings. But, whether of information theory or communication theory, there is at issue a statistical concept of information and communication, as bodies of fact or impulses to be stored, moved, retrieved, short-circuited, etc.—to be weighed by the ton, so to speak, and deposited by tens of millions like money in a bank. Information so conceived is filling libraries, taxing abstracting services, and mounting

problems that even computers cannot solve.

A way out is suggested, based on a subjective approach to the problem. If, for example, scientists are invited to make statements, appended to their papers or reports, as to their worth—a process of separating some wheat from the chaff can begin. These opinions can be stored as primary sources of substantive subjective information.

Next, "experts" can be presented with batches of abstracts on worthy papers for their appraisal with respect to their "fruitfulness" or "scope." The factor-analysis of such abstracts is illuminating.

My theory of communication enters science inauspiciously. It begins with an understanding of communication in the conversational sense, as social intercourse, or as "talking to oneself." There are two kinds of statements in such conversation—statements of fact and statements of opinion, in line with the primary axiom. What seems a simple statement of fact is an involved matter of functional communication.

The factual, informational, change-involving statement is a matter of *communication-pain*. The statement of opinion is a matter of *communication-pleasure*. All statements of scientific fact are informational, instructive, and directed to objective (i.e., verifiable by anyone) change in the world. But the same applies to much human communication.

It is interesting that in physics a distinction is drawn between *work* and *virtual work*. Work, of course, gets things done in the real world, and is measured in foot-pounds, joules, and the like. In virtual work nothing gets done—it is a conception of a system of particles in equilibrium under the action of a set of external forces; the total work done by these forces when the particles undergo small displacements is zero. The concepts of communication-pain and work are analogous, as are those of communication-pleasure and virtual work.

Scientific thinking is largely communication-pleasure; that is, it is rooted in the everyday, common conversations of scientists, most of which is purely subjective—i.e., matters of opinion—out of which a few major discoveries arise which keep the scientific pot boiling. Conversational communication is at the heart of science.

All facts and information are embraced by communication-pain; all "opinion" (imagination and the like) by communication-pleasure. One's guess is that much of the "information explosion" in science is a consequence of our affluence as a society rather than a necessary condition of scientific progress and that the number of scientists in the nation could be enormously reduced with little harm to science.

Scientists and science cannot do without communication-pleasure. Nor is what is at issue a system in which scientists can seek self-gratifications in conferences. Communication-pleasure is not a reward mechanism. What is at issue is the common communication of scientists, their everyday conversational connections, the very substance of science in a cultural sense.

There is a need for a process of opening up communication in science to orderly regard. There is as much to be done vis-à-vis communication-pain as there is about communication-pleasure, except that science and communication-pleasure seem to go together and technology and communication-pain seem to go hand in hand.

There is a broader issue with which science will have to come to terms. It concerns how the general public should relate to science. Should it become involved in science as a matter of information, or to the public's own communication-pleasure?

What happened to science information as it flowed from the scientists, through science writers ("whose task is to translate the scientist's message into terms that the public can understand"), thence to the newspaper (or other) editor, and finally to the public, was studied. The study indicated that, whereas scientists and science writers gave a truthful account of things, editors changed what the science writers gave to them to make it more palatable for public consumption. The facts reach the public in more or less distorted, erroneous, or misinterpreted forms. Consideration of information flow is absurd until a basis of selection is available for what is, and what is not, to flow.

Communication theory, in communication-pleasure terms, provides the required basis. It does so by assuming that the public already talks about science in conversational respects, and that what it talks about suffices in principle for its communication purposes, that is, for social interaction in virtual work, communication-pleasure terms.

The concern, therefore, has to be with understanding what the public already has in its mind about science, not as information but in communication respects, that is, playful respects, and to see how this and science itself can best be brought together, not to bring about more information flow but more of what is culture-forming.

The public can be made aware of the great place of science in the world without adding to its store of science information by any significant amount. It is a fallacy of the information theorists that the more information one pumps into a system, the better. On the contrary, the public is likely to fasten upon a few simple themes, which suffice for common communication.

From time to time there will be moon walks, cancer cures, and the like, about which people will have communication-pleasure. These are communication godsends. The mass media also contrive science "news," such as "human interest" stories. There is the flavor of science information in all of this, of course, but surely much more of simple fun, excitement, and, in a word, of play and communication-pleasure than anything of factual import.

But who is to interpret science to the public, to show its deep significance for mankind, the breadth of its outlook, the deepening understanding it provides, the culture it contains? One can only recommend a body of science writers who know the journalist's creed in order to be watchdog for the public good and to give the public the "truth," if by this is meant no untruth as such but plenty of what is communicable, i.e., novel, newsworthy, and something to talk about from the public standpoint.

The emphasis must be on communication-pleasure if we are to have a culture influenced by science as such.

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Reprints of original article from William Stephenson, Ph.D., Walter Williams Hall, University of Missouri, Columbia, Mo. 65201.

An Information-Processing Model of Freud's Concept of Cathexis

Pat-Anthony Federico

An information-processing model is incorporated with Freud's notion of cathexis. Freud considered instinct or drive as a force consisting of internal excitatory stimuli arising from the body, impinging on the psychic apparatus, and consequently, impelling the organism to specific actions. Cathetic energy (CE) was thought of as a quantum of energy capable of effecting goal-striving behaviors.

The psychic apparatus (PA) was a hypothetical construct which represented the organization of nervous system functions. The PA was influenced by conditions within the environment, within the organism, and within itself. The means of influence from these three sources was conceived of in terms of quanta, or stimuli. Quanta from the external world, from the interior of the organism, and from the PA itself aroused activity in the PA, which, in turn, directed energies back to these sources.

Freud described cathexis from topographic and economic points of view. He proposed that the work of the PA was regulated by the effort to avoid accumulation of excitation and, as far as possible, to maintain itself free from excitation. Colby, Freud, and Rapaport either expressed or implied the existence of some sort of information network or system which controls or guides the distribution of CE. Colby affirmed that an organism cannot properly be considered as a closed system. It continually receives various energy inputs and transduces these into multi-behavioral outputs. He also alleged that CE just spontaneously dissipates. Only CE which is operating in a psychic structural apparatus can be goal-directed. The PA operates on stimuli from the external world, from the interior of the organism, and from the PA itself. It in turn directs CE back to these sources. As they are stimulated by these inputs, drive schemas excite other components of the PA with their content. The PA must process information in order to effectively accomplish vital psychic functions.

The applications of communication theory and computer models to psychology have greatly stimulated thought. Their constructs have contributed much to the analysis of human behavior. A person can be regarded as a kind of transducer in a communication system—as a receiver of power input from two systems (the internal and external environments) and as a supplier of power output to different systems (the somatic and autonomic nervous systems). An individual then can be considered as receiving information from his surrounding world (perceiving), storing (memorizing), and transmitting it (communicating).

Freud's psychic apparatus can be considered as a communication system with computer-like components. The PA is a competent transducer, having two essential functions—gathering information from the environment and past experience and monitoring psychic energy distribution.

The functional components of this system are as follows:

Read-in Unit (Cs.)—This component receives input data from external sources and the external motoric transducer. All novel external data must pass through this system; that is the means by which the PA acquires external information.

Decoder—This unit translates the messages received by the read-in unit into comparable psychic-apparatus language. It is one of five components of the computing system.

Interpreter—It is the second component of the computing system, which reads the PA-language for the computing system.

Arithmetic Unit—The third component of the computing system, which performs numerical operations on what the interpreter reads and what is retrieved from storage; it performs these operations according to a stored program.

Control-Generator Unit—The fourth component of the computing system, which governs the output unit; it monitors CE distribution according to the arithmetic unit's dictates.

Accumulator-Register Unit—The fifth component of the computing system, which serves as a readily accessible temporary storage for the arithmetic unit; it makes difficult computation possible.

Computing System (Pcs.)—The calculating system of the psychic apparatus, composed of the interpreter, the arithmetic unit, the control-generator unit, the accumulator-register unit, and the decoder; it receives input from the read-in unit and monitors the content of memory-storage.

Output Unit—It selects the means of output according to the control-generator's dictates; it governs the motor unit; and it puts data into storage.

Motoric Unit—It monitors behavior by controlling the internal environment (autonomic nervous system) and the organism's behavior toward the external environment (the somatic nervous system).

Memory-Storage Unit (Ucs.)—This system permanently accumulates all input data to the PA, whether it by-passes the computing system or not. Data which are retained only temporarily in the accumulator-register can be held in memory storage on a permanent basis. This storage unit can directly control the output unit without mediation by the computing system. Finally, this memory-storage unit contains the feedback-data program which has been psychically determined by all data entering the PA.

Input—The input consists of "enco-info" messages composed of data. Each datum that enters the computer-like PA is assumed to be resolvable into two components. One component is the energy element, and the other is the information element. The energy element is measured in terms of CE units; the information element is measured in terms of bits. Outcomes that reduce tension or fail to reduce tension are given.

The essential function of the PA is to process information so it can regulate efficiently the expenditure of CE. If the rate of input of data is too rapid, the PA will be overloaded. Due to this rapid or random input, the PA will not be able to differentiate incoming messages (anxiety). Consequently, the system will not be able to function adequately.

Finally, the development of the PA is considered to be an increase in its capacity to process information. As the PA forms, it increases its input channel capacity, enabling the PA to scan a larger number of data at a much faster rate. This makes possible the variability in the distribution of CE which should accompany normal PA development. PA augmentation is paralleled by an increase in the storage capacity of the Ucs.-memory unit. The PA actually generates through the information that it processes, the probabilities required to relate effectively with its external and internal environments. It stores these acquired probabilities as a means for predicting future encounters with its environments so that it can energize those behaviors which have a high probability of producing pleasure and avoiding pain.

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Nonverbal Behavior and Nonverbal Communication

Morton Wiener, Shannon Devoe, Stuart Rubinow, and Jesse Geller

There has been a marked resurgence of interest in behaviors variously called "body language," "expressive movement," and "nonverbal communication." The inclusion of the terms "language," "expression," and "communication" in such phrases suggests an act of transmission of information from one person to another: that is, the terms imply a subject who is actively making his experience public to some other person. The terms, as used, also suggest that there is a set of nonverbal behaviors which have shared meanings in the same way that there is a set of verbal behaviors which have shared meanings. It would be reasonable, then, to expect that investigations conducted under the rubric of nonverbal communication would be concerned with the transmitting subject (encoder) and with the behaviors (code) by which he makes his experience public to another (decoder). Most investigations, however, seem to be concerned with the significance some observer attributes to a particular behavior; that is, the emphasis seems to be primarily on decoding and there is little consensus about any set of behaviors which can be considered to serve communication functions. In fact, such diverse movements as body or head positions, lint picking, foot kicking, scratching, gross postural shifts, and hand and arm movements, such as palm up during a verbalization, have been considered equal cogent and relevant for an investigation of "communication."

An examination of the literature on body language, expressive movements, and nonverbal communication would indicate that investigators fuse the notions of sign and communication and all too often an observer's inference seems to be interpreted as a subject's communication, either explicitly by the investigator himself or by some ambiguity in the conceptualization which makes it possible for a less sophisticated reader to make the transformation.

The problem appears to be a fusion of the notion of sign and communication. The phrase "movements are expressive" seems to be a major source of this confusion. One interpretation takes the phrase to mean that: "In principle, under specified conditions, everything a person does, every action or movement he makes, can be used by a trained, knowledgeable and sensitive observer as a basis (either from the behaviors themselves or from inferences based upon these behaviors) for categorizing (or inferring about) the individual—his state, thoughts, feelings, personality, or cultural patterns." In this context, the phrase "everything a person does . . . can be used as a basis . . . for inferring about . . ." can be abstracted to the statement: "If behavior x occurs, an observer may infer a concomitant state y, or an antecedent z, or both, as *correlates* of the behavior x."

A second interpretation of the phrase "movements are expressive" takes "expressive" to mean that a behavior is a manifestation of something which is itself not observable. The apparent reasoning in this interpretation is that since an observer can infer something (e.g., a genotypical characteristic, psychodynamic conflict or group membership) about the speaker from a movement—much as

he can from a spoken word—then what has become evident to the observer must have been *made* manifest by the actor. The movement is then considered to be a communication, i.e., something is being made public by the doer. This interpretation of "movements are expressive" then involves a shift from an observer making an inference, given certain behavioral events, to a subject who is manifesting something, i.e., communicating via these behaviors. In this interpretation, what is being made evident is known by the observer who makes the inference, while the doer apparently neither "knows" what is being made manifest (his assumed "communication") nor does he make any inference about his movement. For this reason, the phrase "movements are expressive" is further transformed to read: "A person, in doing *x*, is revealing *y* covertly." In this form, the behavior is seen as a manifestation of something covert which is being "involuntarily" communicated or revealed.

The first interpretation of "movements are expressive" was concerned with an *observer* who makes inferences about the subject, about concurrent cognitive or affective experiences of the subject, and/or about antecedents of the behavior. In contrast, the transformations of the second interpretation have subtly shifted the focus to a *subject* who "intentionally" or "unintentionally" symbolizes unacceptable content by means of these behaviors. In these transformations there is also a shift from an observer who is knowledgeable about a set of categories, uses them reliably, and has a set of correlated events with which he associates the categories in his observation, to an observer who has been specially trained to interpret symbolic forms of expression within the context of some particular theory (e.g., psychoanalytic).

The writings of many psychoanalytically oriented investigators reflect how the transformation from movement as sign to movement as communication could occur. This transformation seems to derive from a particular emphasis within this framework. A patient's task in the psychoanalytically oriented situation is to make his past and present experience public via verbal language; the analyst's task is to understand or "make sense of" the patient's report. To understand, in this tradition, is to seek indices of content and experiences which are not being verbalized—that is, the latent content. This concern with latent content goes with the assumptions that everything which is available to consciousness should be communicable through consensually shared verbal forms, and that anything which is not available to consciousness (i.e., anything being defended against) will be evident only in a form in which the patient himself could not recognize the content—that is, the material is in some symbolic form. Nonverbal behaviors, a potent source of inference, have been taken to be communications by the patient.

From our viewpoint, latent content may be seen as inference drawn by the therapist based on the patient's verbalizations. Although we agree that the manifest content is a communication, when verbalizations are interpreted within a psychoanalytically oriented context, in terms of latent content they seem to be used as behaviors, with the behaviors treated as signs of some other particular state, affect, or experience. What we would take to be an inference from the verbalizations, seems to be taken by these investigators to be a communication latent in both content and form.

Thus, it would seem that in this psychoanalytically oriented view, both manifest and latent content are often treated as equivalent in terms of communications.

To the extent that such transformations occur for verbal material for any psychoanalytically oriented investigators, the same transformations could occur even more easily when dealing with nonverbal behaviors, especially if nonverbal behaviors are taken to be equivalent to nonverbalizable behaviors. To the extent that a therapist can make reasonable inferences from these behaviors, the patient can then be seen as *using* nonverbal behaviors unconsciously to communicate that which he cannot or will not communicate verbally.

In contrast, there are some other investigators who appear to treat all behaviors as signs. In this approach all movements within any one part of the body have been treated as interchangeable, with each movement thus having no special significance; or any movement of one part of the body has been treated as equivalent to any movement of any other part of the body. Movements have been correlated with various indices of affect. Since these investigators use participants in a therapeutic interview as subjects, the temptation is ever-present for a reader to view the reported nonverbal behaviors as communications of affect. Whatever the view of these investigators about the relevance or importance of making a sign-communication distinction, subsequent workers in the field appear to have taken these investigations as studies of communication, as evidenced by the inclusion of such correlational studies in the literature on nonverbal communication. Such studies do not meet our criteria of communication in that we hold that a communication system requires that individual units of behavior be specified; each of these behavior units have specific significance; and for the most part, the significance of each unit be different from the significance of other units. Incidentally, in that most studies of nonverbal behavior of individuals have used psychiatrically oriented interviews as a data source, the result seems to have been the unwarranted inference that nonverbal behavior, if considered to be communication, is communication about affect, or somehow related to affect (e.g., defense against it). Assuming that nonverbal behaviors have significance only for communicating about affect appears to have limited to one domain the possible range of "decoding" or inference-making by the observer. It is not clear on what grounds—logical, empirical or otherwise—the significance possibilities of nonverbal communication have been limited to "affect" significance, while verbal communications are recognized as having the possibility of a variety of domains of significance (e.g., informational, indicative). This implicit constraint seems to have unnecessarily hindered the exploration of the possible communicative significance of nonverbal forms of behavior, even within a decoding perspective.

In contrast to the investigators who focus on behavior of individuals, another group of investigators included in the literature on nonverbal communication focuses on behaviors common to a group. The behaviors of interest to the latter investigators are at least known to be shared; they are thus, from our standpoint, more likely to be acceptable as communicative instances than are behaviors specific to particular individuals. Nevertheless, we hold that it is difficult to determine which, if any,

of these socially shared behavior patterns qualify as communications by our definition.

Like the investigators of individual nonverbal behavior patterns, the investigators of socially patterned behaviors have not clearly discriminated learned behaviors from behaviors which have referents, or habitual response sequences peculiar to communicative exchanges. They fail to make these discriminations primarily because they, like the investigators of behaviors of the individual, seem to focus on observer's responses to or inferences about the behaviors, rather than considering the subject's behavior as a manifestation (i.e., correlation) of some momentary state or other sequence. For example, we can see the transformation from sign to communication (either for the investigator or for the reader) when an investigator points out that a number of behaviors, "insignia of office or rank; clothing, sex, age, and racial characteristics; size and looks; posture; speech patterns; facial expressions; bodily gestures; and the like" can be reliably correlated with a person's position or "role" in the social system. Such events can be seen as examples of signs which can be used by an observer as a basis for inference about the person's membership in a particular group. Even type and placement of living room furniture can be included among the events which can be considered relevant from this perspective. When such behaviors and events are treated as *signs* of group membership, there are no difficulties in accepting these insightful comments on the social scene. However, when these same behaviors or events are called "sign vehicles for expressing" and "communications" about something, the interchangeable use of the terms "sign," "sign vehicle," and "communication" may well lead a reader to believe that all sign behaviors are transmissions of information by the subject, rather than bases for inference by an observer. Further, the transformation from "sign" to communication appears plausible to a reader in that: the correlates of the behaviors cited are often known by most members of the group; members of the group sometimes report having taken these signs into account when interacting with another; the behaviors whose correlates are known can be and *sometimes are used* by one person to manipulate another into attributing to the user these correlates of the behavior; and the metaphor of the theater is often used to describe these kinds of sign behaviors.

Unfortunately, such an approach seems to define communication in such a way that almost anything could be considered a communication. If communication is to be considered as a subset of behaviors in general and of socially patterned, interactive behaviors in particular, some further definition is required which will make possible the discrimination of behaviors which serve a function similar to that served by verbal communication —namely, the making public of experience via a set of socially shared signals—from those that do not. As we have noted, this discrimination will require some consideration and investigation of *encoding,* for we hold that the distinction between inference making and decoding cannot be made without some independent evidence of encoding.

To the extent that for us "encoding" means using a set of code components which make experience public, we must specify the operations of behaviors which we will take as indicators of code usage. Without such specification of behaviors, it is all too

easy to assert code usage whenever we see code components. Such an assertion might be acceptable if the code components were independently specified and agreed on. However, since nonverbal code components have not been specified and agreed upon, investigation of encoding via nonverbal forms requires some set of operations which make it reasonable to infer code usage.

The method we employ to operationalize code usage seems analogous to the procedures suggested by Hofstadter (1941) under his rubric of "Objective Teleology." Hofstadter appears to be arguing that an event can be *considered* goal directed if some observable set of criteria can be stated (in this instance the sensitivity of the doer, the conditions in which the act occurs, the means, and some end state), *and* if modifying any one of these leads to a predicted change in the others. The underlying principle involved in his approach to investigating behaviors or events which have been traditionally defined in subjective terms, then, seems to be that of deriving a set of operational events which are posited as being related, and then checking outcome predictions made on the basis of this posited interrelationship when one of the relationships among the designated events is changed. If the predictions are confirmed in a variety of instances in which the relationships among criterial events are manipulated, then Hofstadter holds that goal-directed behaviors have been investigated both empirically and objectively.

Our method, then, for operationalizing "encoding" or "code usage" involves a strategy similar to that proposed by Hofstadter. That is, code usage will be posited on the basis of a set of interrelated predicted findings when manipulation (1) of the experiences to be made public, (2) of the forms available to the addressor, or (3) of the responsiveness of the addressor to communication conditions results in the predicted effect on the emitted behaviors as a function of such manipulations. Specifically, this method involves five interrelated steps. First, we start with behaviors which are consensually taken to be an instance of code usage —namely, verbal language behaviors. Second, we will identify a set of behaviors associated with verbal language behaviors. The occurrence of this set of behaviors is taken to be independent evidence for, and consistent with, the assumption that encoding is taking place in verbal behaviors. That is, we will identify behaviors from which we can conclude that the encoder's verbal behavior is systematically modulated as there is a change in the experience to be made public, in the conditions of the communication, or in the response patterns of the decoder. Third, we will demonstrate that in the same way that predictable introductions take place within verbal language (i.e., variations in words occur as a function of systematic manipulation of the experience to be made public, of the conditions of the communication, or of the decoder's response patterns), predictable nonverbal behaviors will be introduced when the verbal possibilities are constrained. Fourth, we will show that the introduction of these nonverbal behaviors does not result in changes in those decoder behaviors which we take to be indicators of decoding or "understanding" in verbal exchanges. Fifth, we will argue that if these nonverbal behaviors are introduced predictably, and if their introduction does not result in a significant change in "decoding indicators," then the nonverbal forms in-

troduced can be considered to be substituted for verbal forms, and thus can themselves be considered as components of a nonverbal code whose emission involves code usage.

Four classes of behavioral events can be identified whose occurrence coincides with our assumption that verbal language involves code and code usage. Two of these classes, "search" and "correction," appear to be indicators of a code, that is, a standard against which emitters "check" their verbalizations. The other two classes, consistent with an assumption of code usage, are "Regulators," one set emitted by the addressee to indicate decoding and another set emitted by the addressor to "check" on whether decoding is occurring, and "Message modulations," which are responses to variations in the event to be made public, to the conditions of communication, and to the regulators or other behaviors of the addressee. These four classes of behaviors appear in both verbal and nonverbal forms during verbal interactions. (These classes of events are described more fully in the longer text.)

Search typically involves a pause greater than the stops required for paralinguistic designation of word, phrase, or sentence; such a pause may also occur at points other than paralinguistic junctures in the flow of verbal communications. The pause is usually accompanied by the speaker looking away (usually up) while maintaining a constant tonal pitch (the pitch neither drops, as at the end of a declarative statement, nor rises, as at the end of a question). At the end of the pause, the speaker reinstitutes the flow of verbal communication. Verbal forms of search may include such statements in the pause as, "I can't think of the right word," or "What's that word that means the same as (x)?" We have not noted a significant number of instances of search for nonverbal components, except under special circumstances such as "charades" or "sign language."

Correction is usually noted when a speaker changes an element or component in his ongoing flow of speech. It is most evident in a verbal exchange when an emitter says, "I meant to say 'ambiguous,' not 'ambivalent,'" or when an addressee says something like "You mean 'ravenous,' not 'ravishing,' don't you?" When the emitter makes a correction, it is often preceded by a search; correction by the addressee typically occurs immediately or as soon as the speaker pauses (i.e., at the end of the "thought"). Examples of addressee correction of nonverbal forms in communication sometimes occur in response to tonal variations, as when a mother says to her child, "Don't talk to me in that tone of voice," or by an emitter when he says "I didn't mean to say it in that way," and repeats the message, changing the tonal variations. As noted above for search, correction of other nonverbal components (e.g., gesture) is also rare, again except in special situations such as charades or sign language. It may well be that the infrequent occurrences of search and correction for nonverbal forms is a function of the relatively small number of components in these nonverbal codes.

Regulators are behaviors which we hold are taken by addressees and emitters as signs that encoding or decoding are occurring, although we do not include these behaviors in the code itself. The set of behaviors we call regulators is more restricted than the set implied by some investigators (e.g., Scheflen), in that our set includes only those behaviors which are

emitted (a) by most encoders and decoders of a communication group, and (b) in most if not all communication situations. The set of regulators (described in the original text) is derived in part from the thought provoking and intriguing study of particular regulators by other investigators (e.g., Exline, Gray, & Schuette; and Hall).

Message modulation within the context of verbal code usage is taken to mean predictable variations in form or style of utterance, or in the components used. These verbal variations are consistent with the assumption of code usage in that the modifications seem to provide evidence that the speaker is taking into account, in his verbalization, changes in the experience to be made public, the conditions of the communication, and the characteristics and responses of the addressee. For example, a young male in describing his activities with a date on the previous evening will use different components when relating the events in a locker room and when speaking to the same addressee in a restaurant. As another example, upon hearing an addressee's foreign accent, or when speaking to a child, an emitter will speak more slowly and clearly and may also use words that are more common than the words he would use with a native adult addressee. As still a further example, a man who complains to his fellow workers using one set of statements will reword the complaint when speaking to the president of his company.

The approach now requires the specification of a set of behavior which are hypothesized to be nonverbal code components, to demonstrate that search, correction and regulators co-occur with these behaviors, and to show that the hypothesized code components will occur *predictably;* that is, they can be seen as substitutes for verbal code components, given the appropriate conditions for message modulations accompanied by restrictions in the use of the verbal code. The behaviors denoted are particularly arm and hand gestures (outlined in some detail) with a description of specific methodologies for checking whether posited components can be considered communications rather than signs or other behavior.

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Stages in Language Development and Reading Exposure

Carol Chomsky

This study traces the acquisition of specific linguistic structures, revealing the children's construction of implicit grammatical rules. The results demonstrate a common order of acquisition of syntactic structures among the different children though there is considerable variation in age of acquisition.

We also examined the relation between rate of linguistic development and exposure to written materials as a source of complex language inputs. Our results show a strong correlation between reading exposure and language development.

The Linguistic Study

Speakers of a language can understand and produce sentences they have never before heard; furthermore, they can recognize whether or not any sequence of words constitutes a sentence in their language. This creative aspect of language use rests on the fact that they have learned the system of rules for making sentences —the grammar of the language. Because the rules are implicit, they cannot be observed directly. While the linguist is interested in the speaker's *competence* (the underlying system of rules), he has access only to a speaker's *performance* (the way he uses the rules). Thus, various aspects of performance are used to reveal the nature of underlying competence.

What the child learns as he acquires his language is a complex system of rules that enables him to understand and produce the sentences of his language. He internalizes these rules from what he hears by a process of active construction as yet little understood. Evidence shows that, even in his earliest verbal constructions, the child is creating sentences according to grammatical rules that he continually constructs and revises. The acquisition of syntax, then, means developing the rule system, restructuring it as new evidence is added and eventually producing an internalized grammar which accords with the facts of the language.

By age 6, a child's grammar in his spontaneous speech does not appreciably differ from adult grammar. In order to identify areas in which child and adult grammar are different, we must probe the child's linguistic performance. Children's comprehension and interpretation of complex grammatical structures yield evidence of the syntactic rules employed and the way in which these rules diverge from adult grammar.

On the basis of current linguistic work we can select a variety of complex grammatical structures that appear to be likely candidates for late acquisition by children; the structure must also lend itself to testing with young children. The structures and tests finally used are the result of much planning, revision, pilot testing, and many discards.

We did have some theoretical and practical guidelines to aid in selecting structures. For example, the relation between two structures, *promise* and *ask*, is such that a given order of acquisition is implied on theoretical grounds. *Promise* is simpler than *ask* along a particular scale of complexity and ought therefore to be acquired first. These two structures had potential for yielding developmental data. Another construction, *easy to see*, is a good indicator of grammati-

cal development although no experimental work has yet suggested a relationship to other constructions in terms of order of acquisition. All of the constructions tested with children for the first time here resulted from a fortuitous intersection of complex structures and experimental techniques that could measure them.

Our experimental procedure elicited information from the children by a direct interview which was carried out informally and, for the children, was interesting play. Our test group ranged in age from 5 years old, when many of the children gave evidence of not yet knowing the constructions, up to 10 years old, when a number of the children exhibited an adult command of the structures. Of particular interest is that variations in age of acquisition does not seem to affect order of acquisition of different structures. For the structures reported here, the evidence is that linguistic development, whether it occurs earlier or later, nevertheless proceeds along similar paths.

We selected 36 children from kindergarten through fourth grade level in an elementary school in Cambridge, Mass. The children were interviewed individually at school for about half an hour.

The Test Constructions

1. The construction *Easy to See* in the sentence *"The doll is easy to see."*

In this interview we tested the child's ability to determine the grammatical relations among the words in sentences of the form *The doll is easy to see.* The complexity of this construction derives from the fact that the grammatical relations among its words are not expressed directly in its surface structure.

2. The construction *Promise* as in *"Bozo promises Donald to stand on the book."*

Here we examined the child's knowledge of a particular syntactic structure associated with the word *promise.* His ability to identify the missing subject of a complement verb following *promise* was tested, a task which is relatively complex.

3. The construction *Ask* as in *"The girl asked the boy what to paint."*

This interview examined the child's knowledge of a particular syntactic structure associated with the verb *ask.* The child must identify the missing subject of a verb following *ask* in a complement clause, introduced by a question word such as *when* or *what.*

4. Constructions following *And* and *Although.*

Here we tested the children's ability to identify a missing verb differently in two sentences which differ only in the use of *and* and *although* as clause introducers. We used sentences such as:

(a) Mother scolded Gloria for answering the phone, and I would have done the same.

(b) Mother scolded Gloria for answering the phone, although I would have done the same.

Overall Developmental Sequence

With a variety of structures, we hope to observe developmental sequences in acquisition. Thus, for a set of related constructions, with the verb *ask,* for example, we find that a child's successes and failures on test questions always assume the same pattern. Consider for the moment two separate *ask* constructions: (a) Ask Harry what time it is; (b) Ask Harry what to feed the dog.

Sentence *a* is simpler than *b* in that there is no missing subject in the clause—all information is given and nothing has to be filled in by the

listener. To interpret (a) or (b) correctly, the child must recognize that *ask* signals a question. To interpret (b) correctly, the child must, in addition, select the missing subject correctly. Now when we test children on these two structures, we conclude that the children attain competence on these tasks in an orderly fashion, from simple to complex, according to an invariant sequence.

Finding such sequences when testing closely related structures is not very surprising, but it is most interesting when loosely related structures reveal this same orderly developmental sequence. The five structures discussed exhibit this sequential relationship, in the order presented: *easy to see, promise, ask,* and *although.*

These structures appear to be quite divergent, yet our results show that they are acquired in the order listed. The children's performance on these constructions divides them into the following five stages:

Stage 1: age 5.9–7.1
Stage 2: age 5.9–9.5
Stage 3: age 6.1–9.9
Stage 4: age 7.2–10.
Stage 5: age 7.6–9.9

Children who fail all five constructions are at Stage 1; Stage 2 children pass *easy to see* and fail the others; Stage 3 children pass *easy to see* and *promise* and fail the others; Stage 4 children pass all but *although;* Stage 5 children pass all five constructions. The children's individual responses deviated from the observed pattern at the rate of only 4 responses per 100.

A closer look at the structures themselves reveals that they do have one feature in common: They all require the listener to fill in a missing item in order to understand the sentence. Technically, the listener, given only the surface structure of the sentence, must recreate its underlying form, and he has to know the rules governing deletions from underlying to surface structure. If a child has not yet mastered the rules for these constructions, he will make mistakes in filling in the missing items and end up with wrong interpretations.

The general rule in English for filling in deletions is to choose the nearest preceding candidate item in the sentence. These five constructions require instead the rather unusual principle: Don't choose the nearest preceding candidate item in the sentence; keep looking. Children tend to master the complexities in the order listed, with little variation.

In summary, the five constructions tested in this study can be ordered, indicating a developmental sequence in children's acquisition of these structures. The five structures, though quite diverse, all require that the child apply a specific principle of sentence analysis that is uncommon in English. Apparently, the child's ability to apply this principle progresses in a regular fashion from simple structures to more complex ones.

The Reading Study

A second portion of this study surveyed the children's reading background and current reading activity. We wished to consider the relation of the amount and complexity of what children read to rate of linguistic development, along with other factors such as IQ and SES. To do this we used the five linguistic stages outlined above as the measure of rate of linguistic development and a variety of information on reading and listening.

Reading information was gathered through questionnaires to children and parents and through daily records kept at home of all reading (and listening to books read aloud) engaged in by the child over a 1-week

period. We calculated amount and complexity of independent reading (and listening), background in children's literature, and recall and recognition of books read and heard. We applied our own formula for measuring syntactic complexity to the books and magazines reported by the children in their week's record of reading.

By assessing how much and what is read to him, and how much and what he reads on his own, we attempted to characterize each child's independent reading and get a picture of how reading functions in his background and current life. The written language is potentially of a more complex nature than speech, both in vocabulary and syntax. The child who reads (or listens to) a variety of rich and complex materials benefits from a range of linguistic inputs that is unavailable to the nonliterary child. It is this exposure that we wish to examine for its relation to rate of linguistic development.

Relations of Reading Measures to Linguistic Stages

One measure used in our reading survey was Taking Inventory of Children's Literary Background, a multiple-choice quiz which tests a child's knowledge of the content of 60 widely-read books, poems, and stories from children's literature. Scores on the Huck inventory are positively related to linguistic stage.

Master Book List—This list contained the titles of some 400 children's books and was left in the home for the child and parent to complete jointly by checking off the titles of books with which the child was familiar. The number of books checked off that were at the top level of syntactic complexity was positively correlated with linguistic stages. The total number of books checked off on the Master Book List was also a good measure, though not quite as good as the top level count.

Parent Interview—One of the child's parents was interviewed at home. Questions in the interview centered around the child's reading habits, library trips, reading aloud to the child, favorite books, time spent in independent reading, etc.

Three measures from this interview were found to relate positively to linguistic stage: average complexity level of books named by the parent; the total number of books named, weighted by complexity levels of the individual books; and the total numerical score from the interview, calculated from questions with numerical answers.

Child Interview—An interview was held with each child at school. Roughly the same information was sought as in the parent interview. The measure which correlated positively with linguistic stage from this interview was, as in the parent interview, numerical score. This score reflected the child's answers concerning library trips, favorite books and authors, books reread, time spent reading, number of people at home who read to you, and so on.

Given the positive relation of these five measures with lingusitic stages and the positive and significant correlations of these five measures with scores on the multiple choice inventory, we conclude that a valid relation between reading exposure and linguistic stages exists.

One other measure, IQ, is positively related to linguistic development across all stages. The Wechsler Preschool and Primary Scale of Intelligence (WPPSI) test was given to the six children in the study who were under 6.2 years of age at testing time. The remaining 30 children (ages 6.5

and over) were given the Wechsler Intelligence Scale for Children (WISC) test. IQ's ranged from 98 to 142, and not only do the full scale IQ scores increase with linguistic stage, but also the verbal and performance subtests of the test.

SES was highly correlated with IQ but not with age or grade, and the correlations of SES with reading vocabulary and with reading comprehension grade level scores from standardized tests were nonsignificant. Correlations of SES with all measures of books from the parent interview, child interview, and Master Book List were significant at the .001 level.

Relationship of Listening Measures to Linguistic Stages

A calculation was made of the amount of time spent reading aloud to the children and the complexity of the books read to them at home during a 1-week period. Among the prereaders, listening to books read aloud is positively related to linguistic stage. Prereaders in higher linguistic stages are read to by more people and hear more books per week, at higher complexity levels than children at lower linguistic stages.

In summary, the measures which discriminate the whole linguistic range of stages include IQ, memory of content of books read, book counts weighted by complexity level, and questionnaire replies. In addition, certain measures work well at lower linquistic stages and others at higher linguistic stages. Several of the book counts (number of books recalled and recognized) appear to discriminate best at the lower linguistic stages, and word counts (number of words read during the recorded week) discriminate best at the higher stages. Reading complex materials quite strikingly characterizes the top linguistic stage.

Implications for Education

Our reading results indicate that exposure to the more complex language available from reading does seem to go hand in hand with increased knowledge of the language. This would imply that perhaps wider reading should find a place in the curriculum. The child could be read to, stimulated to read on his own, and permitted access to books "above his level" to get out of them whatever he may. Perhaps he should be encouraged to skim when he reads, to skip uninteresting portions and get to the "good parts," instead of concentrating at length on controlled texts. In general it may be that the effort should be toward providing more and richer language exposure, rather than limiting the child with restrictive and carefully programed materials. In this way the child would be permitted to derive what is accessible to him from a wide range of inputs and put it to use in his own way. This approach would seem to be more closely in accord with the nature of language acquisition as we are coming to understand it.

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Providing Mental Health Information Through a 24-Hour Telephone Service

Andreas M. Pederson and Haroutun M. Babigian

During the past decade an increasing number of telephone services have been established as a means of reaching individuals in distress. Although most of the services were originally oriented toward suicide prevention, they have gradually shifted their activities from strictly suicide prevention to counseling and intervention in a much broader range of crises.

Communities have recognized that many people experiencing difficulties that do not involve suicide would greatly benefit from some form of emergency mental health intervention or simply from having someone to talk with. That is underscored by evidence indicating that most calls received by existing services involve problems that are not suicidal in nature. In many cases the calls are made by a person other than the individual in distress. The development of telephone services for specific groups also attests to their expanding role in the community; the teenage hot lines are an example.

Telephone services have the potential for putting a wide range of community mental health principles into practice. They include the use of nonprofessional personnel, the use of mental health professionals for consultation and backup rather than as direct providers of service, the development of prevention programs, and the organization of a communitywide system of interrelated services, as opposed to many community agencies functioning independently.

Most telephone services are staffed by nonprofessionals and have adopted an action-oriented approach to emotional difficulties. However, few such services have realized their potential of becoming an integral and centralized mental health resource, offering general mental health information and coordination between agencies. With the growing number of agencies and mental health facilities in most communities, many individuals—both professionals and nonprofessionals—are not aware of what services are available or even how to use appropriately those that are known to them.

Telephone services have the capability of performing at least four functions beyond crisis intervention, all of which place far more emphasis on preventive aspects of community mental health. First, they can provide information to agencies, the police, the clergy, doctors, lawyers, and other caregivers about the availability of mental health facilities for individuals who need care. Second, they can assist individuals who call about difficulties that their families or friends may be experiencing by providing counseling or information about resources available to them. Third, they can direct individuals in need of help to the most appropriate community facility in the shortest possible time, thereby increasing the chance of early intervention and treatment. And finally, they can help in coordinating the various mental health programs provided by community agencies.

In the Rochester, New York area the 24-Hour Mental Health Information and Crisis Phone Service, under the direction of the division of preventive and social psychiatry at the University of Rochester School of Medicine and Dentistry, services a population of approximately 700,000. It is staffed 24 hours a day, 7 days a

week by trained volunteer counselors who have completed an intensive training program and have received on-the-job experience under supervision. The training program focuses on suicide, crisis theory, and crisis intervention techniques by phone; the volunteers also learn about all the psychiatric facilities and other public and private helping agencies in the community and the services that they offer. A team of professionals, available 24 hours a day, provides counseling and backup for the volunteers. Fifty active volunteer counselors work in 5-hour shifts 1 or 2 days a week. About 30 percent are students, and almost two-thirds are women.

During the first 12 months of operation there were an average of 35 calls a day. The number of calls increased from July 1969 a mean of 11.3 calls a day to July 1970 a mean of 52 calls a day.

Twenty-nine percent of all calls received were for information; they were made not only by individuals calling for themselves or friends or family, but also by lawyers, clergymen, agency workers, law-enforcement personnel, and physicians. Five percent of the calls for information were from physicians. Thirty-two percent of the calls were from individuals who had previously contacted the phone service; 9 percent concerned a new crisis situation and 37 percent were for information.

The study showed that although the proportion of crisis calls by new contacts was smaller after a year, the actual number of such calls was higher than when the service first began. The lower proportion reflects the increased use of the service by individuals seeking mental health information and the increasing number of people who call more than one time.

The figures further indicate that in a community such as Rochester, which has had a comprehensive network of psychiatric services for a number of years, people still have many questions about the appropriate use of the resources available. Significantly, many who use the telephone service to obtain information about mental health facilities are professionals such as physicians, lawyers, the clergy, and agency workers, including the police. But until the telephone service was developed, no centralized source could provide information about the most appropriate agency or service in a given situation.

A telephone service that provides both crisis counseling and information has a preventive role for several reasons. It increases the probability that people with problems will contact the most appropriate facility earlier than they might be able to do otherwise. It also has the potential for reaching larger numbers of people, directly or indirectly, than a more traditional telephone service could. Because it responds to all crisis calls and all requests for information, the telephone service itself can be influential in suggesting changes in a community's network of services. It can provide data about areas in which more services are needed, and about how effectively agencies deal with the problems referred to them. Thus it can make a major contribution to a community through research.

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A Multi-Media Approach to Mental Health

Karen M. Clark

In an effort to avoid categorizing and discussing the differences between mental health and ill health, we developed a new way to present the concept of basic human needs. The idea of a multi-media approach seemed fascinating and slide-tape production was completed. Working closely with the students, we came close together as persons; it afforded a medium through which we all came to better understand ourselves and one another. In my work as a drug consultant for the Minnesota State Department of Education and as an independent lecturer, I used this production. I have found this 15-minute "experience," used as a stimulus for feeling-level thinking, offers wide flexibility and seemingly limitless possibilities for followup activities. The idea has touched the thoughts and emotions of both young and adult audiences. Hopefully it will offer some ideas and maybe spark some creative thinking.

We researched many philosophies explaining basic human needs and decided to use Abraham Maslow's hierarchy as our framework. He indicates there are five basic levels of need. To simplify things we drew a pyramid divided horizontally into five planes. From the bottom up were these five terms, each representing one of the five levels: physical, security, social, self-esteem, and self-actualization. We discussed the importance of defining what those levels mean to us, recognizing there may be some varying interpretations. We discussed the many ways people may try to satisfy each level of need as they understand that level and the many alternatives available for compensating when needs are frustrated or unfulfilled. Thus we acknowledged that differences between us exist and are important. Yet we returned to our main premise that people are "more alike than different" when we consider the basic levels of need we share.

At this point we began searching for pictures to exemplify the following: how people may define each need level; what people do to fulfill that need; and how people compensate for frustrated, unfulfilled needs. The students shared their pictures with one another and explained why they selected their particular pictures. Some students found identical pictures but used them to exemplify different levels and different expressions.

This mutual sharing of their pictures opened opportunities for the students to look into themselves and to express what and why they felt as they did. Within this safe setting, using pictures of other people, the students shared something more of themselves than many could have before. They discussed the need, their need, to be loved and to love, the need to feel worthwhile, important, cared for, and accepted. It became apparent that, although our obvious appearances and behaviors may be in opposition, our goals in terms of meeting basic human needs are shared in common.

The difficult task was sifting through the hundreds of pictures in each category to select about 30 to be used at each level. We used the same three points the students had used in their initial selections and tried to choose those that would capture as much meaning and significance as possible. Slides were then made of each of the pictures selected.

Next came the search for five musi-

cal selections to be used as a background during the time slides for that corresponding level were being shown. Three were instrumentals and two were vocals. These five were spliced together into a 15-minute tape.

Throughout the presentation, two slides are shown side by side, providing an opportunity to magnify the impact of each individual picture. For example, during the first level, physical needs, one picture is of a group of people laughing and gorging themselves with the abundance of foods spread before them. The other picture is of a distraught woman clinging to her emaciated, starving child. The purpose of this contrast is not to elicit a maudlin emotionalism but rather to stimulate an increased sensitivity to one's self and an awareness of the world of others.

The presentation can be used in many ways and for many purposes. In working with groups from 10 people to 600, I have found it requires a minimum of 1 hour to meaningfully present the slide-tape and concepts. Introducing the presentation and establishing the objectives for the specific group and topic to be focused upon are of extreme importance. Regardless of the specific topic being discussed (and there are many that the slide-tape adapts to well), I stress that the multi-media experience is a very individual experience. There are no "hidden agendas" and no "right ways" of interpreting or responding to it. Usually I suggest a question they might try to answer, stating it in such a way that the answers will be in the form of specific actions the individual can or could take. Often these actions reflect ways of better communicating, reaching out more to others or whatever best fits the specific focus of the group I am working with. Only after the audience has written are they told papers will not be collected. They are to keep them as a reminder of the directions they have given themselves for influencing their own behavior. They may also refer to their papers if we move into smaller groups from this point for followup activities.

This presentation is a stimulus for thinking and for acting. Therefore, followup activities are of great importance as they relate to well-established defined objectives for each group's use of the program. Discussions in small groups and activities focusing on one or two points have proven to be exciting avenues for sharing ideas, reactions, and feelings and for developing an increased awareness of "more alike than different."

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Rejected Children

N. Lukianowicz

A recent review of 100 unselected Child Guidance Clinic children showed an extremely large number of children rejected by one or both parents, or by their substitutes (adopted parents or foster parents).

It appears that the middle social class parent was least tolerant of children, while the uppermost social class and the lowest socioeconomic class seem to be more tolerant; this suggests the insecurity and the thwarted ambitions regarding their children in parents from the upper-middle class.

The parents' own childhood and the treatment they had received at the hands of their parents had influenced their attitudes to their own children; only a small proportion of the parents had a "happy" childhood. Parents who described their childhoods as "unhappy," reported the following reasons for their unhappiness: parental rejection, maltreatment, illegitimacy, broken home, and parental desertion.

Each parental absence represented in our group of children suggests that the children react in a different way to each. After a brief period of normal grief following a bereavement, children take parental death as an unavoidable and irreversible event and make a satisfactory adjustment to their new situation fairly soon. Children whose parents were away from home because of a recurrent or serious illness show an astonishing understanding and did not develop any neurotic reaction. The sons of sailors or soldiers develop a "hero worship" for the absent father, identify with him, and show no damage to their developing personality. Worst off were children whose parents "voluntarily" deserted them—through divorce, separation, or real desertion.

The intelligence of the children was on the whole similar to the intelligence of their parents, although the mean parental IQ was perhaps a few points higher. The children reacted to being rejected either by developing neurotic reactions or by displaying disturbed behavior.

Almost all parents were cooperative with the psychiatrist and psychologist, but there was a hostility toward the psychiatric social workers whom they blamed for "meddling in our personal life." There were two main causes of parental lack of cooperation: The children's "misbehavior" provided the parents with the desired excuse for rejecting them; and the children's neurotic symptoms, especially expressions of fear and anxiety, helped the parents to satisfy their own neurotic needs and to bolster up the shaky parental ego.

A few conclusions may be drawn from the study: The number of rejected children is much greater than is generally realized; parental rejection depends on the parents' own childhood experiences, attitudes, emotional needs, and ambitions; results of treatment were encouraging—most cases made a quick and full recovery.

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Reflections on Communication and Autistic Children

Mildred Creak

All observers agree that a major defect shown by autistic children is their inability to communicate. Communication is often lacking even in children who eventually show improvement and develop an adequate use of speech. While many remain mute or use an idiosyncratic form of speech, it is not so much the words but "relatedness" and the outgoing social initiative and response that are so noticeably absent. The emphasis on a defensive reaction toward incoming stimulation was often interpreted as implying a negative response, a thrust away, thus delaying attempts to explain the phenomenon in terms of the inner and personal meaning (if any) to the child of normal social contact.

We are thus faced with the basic problem: Do we speak because we think, as is usually assumed, or do we think because we speak? The situation is not as simple as that. We are coming to see more and more clearly that the full experience of human communication is something not limited to the use of correct words.

We are well familiar with the barrier to communication caused by cerebral damage. When this occurs before or during birth, it may entirely prevent speech function from developing. The extent to which it prevents a cruder form of communication depends on many factors, ranging from the level of undamaged potential for intellectual development to the achievement of the complex neuromuscular control required in the act of speaking or writing words. Easier to understand is the block caused by deafness when the input of verbal stimuli has to find a new way, whether by means of a hearing aid, lipreading, or sign language. The surprising thing is to discover how relatively easy communication can become when an intelligent, but "deaf-and-dumb," person is all intent on receiving the message.

This résumé of the present trend of thinking about autism and communication may be enough to remind us of the enormous gap between the behavior or nerve cells within the brain and the accumulation of understanding, of storage, and of consequent thoughts and ideas which form the essence of adult human communication.

The establishment of a sense of personal identity derives from close warm care which permits the growth of this small human plant to the point of emergence into a relatively independent and personal life of its own. Individuation occurs, leading to the stage of verbal expression, very simple at first, but all the time increasing in range and complexity. It is the lack of any accompanying personal involvement, communication, which seems again so characteristic of the autistic child. It has been pointed out that autistic children not only fail to communicate, but also fail to receive our attempts to communicate with them.

Language is clearly not built up from a series of anatomical centers—the speech center, the hearing center—being damaged or delayed in the developmental pattern, but a complex fault in building up a communication system with a meaningful part to play in that individual's life. How and when is such information stored and recorded, so that it becomes meaningfully linked with subsequent happenings? One has the impression that the

autistic child is bombarded with a welter of meaningless stimulation, speech fails to communicate, and inevitably attention is not gained or is positively rejected.

Sophisticated EEG work sought to explain this or at least to link it with EEG evidence suggesting a state of overarousal. Research led to consideration of the role of the reticular activating system, but it was clear that this was not a totally adequate answer. If more recent approaches to the problem of early autistic patterns (as shown in children before speech has begun) have taken a definite and lasting direction in the last 5 years, it is to support the view that the basic handicap is built in, and that much of the resulting emotional distortion (which indeed can be infectious to the family as a whole) is secondary.

Autistic children in their intense loneliness appear not only to have nothing to communicate, and nothing to communicate with, but also seem to have no urge or direction toward acquiring these elemental human attributes. For the autistic child, the degree of understanding as to what is expected of him is reflected in the degree of autistic withdrawal and disturbance that he shows. When, as so frequently, he fails to understand the demand, he may show more disturbance. If he can understand, there is often a decrease in such behavior and he will go ahead to do what is asked of him. This implies that much of the time the autistic child is neither simply unwilling nor involved but wholly at a loss; his confusion overflows into increased autistic behavior.

The language faults often show "impaired ability to comprehend components of phrase structure," which also impedes the children's understanding of anything complex in the speech of those trying to communicate with them. It has even been questioned whether the autistic child can regard speech as more than yet another noise impinging on his consciousness. The child may indeed be unaware of communication as a normal human exercise. While methods that aim at introducing speech and language may actually succeed, they obviously must be actively linked to an understanding of the meaning of the imparted instruction to "hear" and "understand."

It is as if for the autistic child the echoes and inward associations of things said fail to attach themselves to any growing awareness of the personal and social relatedness we all develop toward the world in which we grow up. In this situation, such children create for themselves an emptiness so that those of us who love them, or seek to care for them or improve their lot, will find ourselves nearly as lost as our patients. There the story might end were it not for the massive investigation and research into this difficult area of abnormal developmental patterns in early childhood. Would it be too bold an assumption to suggest that the nature of communication, what it means to the human being, and how it gets established in each individual, is possibly the key note to the whole?

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The Use of Written Language as a Communication System for an Autistic Child

Nancy R. Marshall and Jack Hegrenes

The autistic child is often not included in speech therapy because of his severe limitation in expressive skills. The emphasis by speech clinicians on factors other than functional communication, such as articulation therapy and syntactical sequencing, has excluded the autistic child from speech therapy programs. The opportunity to develop language in the autistic child may be limited because of a lack of therapeutic procedures available to the speech clinician. Since there are severely limited verbal expressive skills in autistic children, one must consider the development of alternative communication systems, for example, a written functional communication system. The case study of Mark demonstrates the application of that alternative system.

Mark, now a boy 7 years, 8 months old, appeared to be normal until he was 2, when a grandfather died. Shortly after this loss, the family moved. In their new living situation they became part of a large extended family in confined quarters. Mark suffered many physical abuses from other small children. Before this, he had been saying a few phrases and had the expressive vocabulary of a 2-year-old. According to his parents, he stopped talking abruptly, and his attentiveness to stimuli decreased greatly. He "went into a world of his own" and would not engage in eye contact, was "nonloving," and did not like to be held.

At this time Mark was evaluated for a possible peripheral hearing loss. He was evaluated by an audiologist, a speech pathologist, and a neurologist. No notable auditory responses other than eye blinks were obtained. No speech behavior was elicited. The diagnosis of autism was made by a psychologist, a pediatrician, and a neurologist. He also received four speech evaluations and three audiometric assessments. He was referred to the Multiple Discipline Clinic, Crippled Children's Division, University of Oregon Medical School, for a 5-week comprehensive evaluation where diagnostic findings did not differ from those of previous studies. The speech pathologist estimated Mark's verbal comprehension at between 18 and 24 months. His expressive behavior consisted solely of whines and whimpering. His auditory acuity was within the normal range. Mark was referred to one of the specialty clinics which uses behavior modification to effect the acquisition of speech and language.

In an attempt to gain stimulus control, the clinicians used a program of spatial organizers (various techniques to keep the child in a chair) and attending to the clinician. A primary reinforcer (candy or ice cream) was used to establish sitting and attending behavior as well as eye contact. Once these behaviors were established, imitative behaviors were introduced into the program, including gross motor movements, oral posturing, and vocalization. Mark was not able to reach criterion for vocalizations, and further attempts to elicit them resulted in disruptive behavior. In a free operant situation (rewards are not contingent on specified response), Mark was allowed to hit the

keys of a typewriter as the clinician vocalized the phoneme which matched the letter key. On a trial and error basis, the clinician found that Mark would type individual letters when she produced a sound. This was expanded to words and then phrases. Because of his skill with receptive language and limitations in the vocal aspect of therapy, the vocalization in therapy was terminated. The words and phrases learned in the typing situation were transferred to word cards. At the point of transition from an attempt at eliciting vocal responses and the typed responses to expanding his receptive language repertoire by means of word cards, Mark had completed 44 therapy sessions for a total of 22 hours.

A program similar to a patterned-language program was initiated, designed to help the child acquire a functional relationship with the printed word. In this program three goals are established: the development of a beginning functional vocabulary using word cards; the correct semantic and syntactical sequencing of the word cards; and transferring the concepts learned via the word cards to written communication. These goals were designed to enable Mark to use linguistic skills to make his wants known. The therapy was set up around eating behavior. At first Mark only needed to point to the word card to obtain a small portion of the item named on the card. After some practice, the cards were mixed up and Mark had to select the card representing the item he wanted. When he obtained a 100 percent correct-response rate, new cards were added with articles, verbs, adjectives, and the pronoun *I*. Correct responses were modeled by the clinician. After the clinician arranged the word cards, Mark was physically manipulated to point to each word in the sentence while the clinician stated the word verbally. Gradually the modeling was faded, and the training stimulus "What do you want, Mark?" was instigated. The response was a complete sentence, such as, "I want a piece of peanut butter and jelly sandwich."

Mark is presently learning how to write in order to transfer his receptive language from the clinical situation to functional communication. The word cards are placed in various pockets on a vest which he wears at home. He uses these cards to obtain food and clothing items as well as activities in the home. Patterned-written language seems to be an effective means of developing a secondary communication system for certain types of nonverbal children.

Mark continued to demonstrate marked behavioral deficits. To help him relate better to his environment, more intensive therapeutic efforts seemed indicated. To determine the most appropriate treatment plan, two child psychiatrists saw Mark and respectively diagnosed his illness as childhood schizophrenia and interactional psychosis. Plans are being initiated to place him in a residential treatment facility for emotionally disturbed children.

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Nonverbal Information Storage in Children and Developmental Information Processing Channel Capacity

Bikkar S. Randhawa

Information storage in information-processing tasks may be represented either visually or verbally. The "verbal loop hypothesis" represents S as processing information primarily through a verbal storage and retrieval mode. This hypothesis states that the S processes perceptual information in two stages: translation of the input information into words, and reproduction of the response on the basis of retained verbal information. Furthermore, if the verbal translation of a stimulus is available, then recognition will be better than when such verbal translation is absent. The present study was designed to test this proposition.

A second viewpoint is that nonverbal referents, images, are employed for the storage of information in information processing tasks. This theory maintains that the S receives the stimulus via receptor(s), "organizes" it via translation, if required, into a nonverbal referent (image) and holds it, and then makes his final response. On the basis of this theory, recognition of a stimulus in nonverbal form (shape, design, pattern, etc.) would be better than that in verbal form. Therefore, this study was designed to test whether the information output from "pure" verbal tasks is greater than from "pure" nonverbal tasks.

The S's were 120 children—40 from each of 5-, 8-, and 12-year age levels. Ten children from each of the age groups were assigned randomly to each of the four main treatments.

The basic test materials consisted of a form-board and 32 plastic geometric shapes. The stimulus and the response modes of the four information processing tasks utilized in the study were: Visual (V) input, and Reconstruction (R) output; V input, and Verbal Description (VD) output; Verbal (VL) input, and R output; and VL input, and VD output. For the V–R and VL–R treatments, the S was required to reproduce the design with the given materials after each presentation of the stimulus. But for the V–VD and VL–VD treatments, the S was required to give a verbal description of the design after each presentation of the stimulus in the context of the reference materials.

The amount of information output was greater for the older children than for the younger children. Visual information processing was easier than verbal, and the amount of information output in the reconstruction was significantly greater than in verbal description.

Children's information output was greatest for the "pure" nonverbal task and least for the "pure" verbal task. The information output for the tasks involving verbal and nonverbal components was between the two extremes. The task involving verbal output was more difficult than the one involving verbal input. The verbal loop hypothesis would appear to be contradicted by these data. However, it is possible that the exact form of the verbal message provided by the experimenter does not match the form in which the object is verbally encoded by the S when seen visually and the self-directed encoding is probably

in a more optimal form for retention and retrieval; visual presentation would be superior to verbal presentation despite verbal encoding. Since the nonverbal information output for the verbally encoded input was much superior to the verbal information output from the visual input, the above objections can be ruled out. Also since the visual input was simultaneous and the verbal message sequential, the output information superiority from visual presentation may be due solely to these differences. It was noted that the nonverbal information output was considerably greater than the verbal output when the input for both tasks was verbal. Thus, the effect of output mode is significant for all ages. The effect of output mode was more dramatic for the visual than for the verbal input. Hence, the superiority of information output from visual as opposed to verbal input may not be entirely explained in terms of simultaneous and sequential input differences. These results provide evidence for the untenability and nongeneralizability of the verbal loop theory.

How is the proposal of nonverbal storage and retrieval justified? Since the pure nonverbal task was the most efficient, it could be argued that this task involved matching without any translation. The scores of the older children on this task show the least utilization of the cognitive processing space. The pure verbal task on the other hand was the least efficient. The storage and retrieval for this task cannot be verbal. For a verbal storage and retrieval, this task would have been a simple matching task requiring a minimum of cognitive processing space. A large amount of cognitive space utilization was probably necessary for this task as indicated by the results. The translation of the verbal input into nonverbal images was needed for perceptual "organization." This organization was to be stored momentarily and retrieved. The retrieved nonverbal storage was to be translated again into verbal response.

On the basis of this theory, the mixed mode tasks would require one translation. The verbal input would be translated at input into nonverbal images for storage before the matching response with the retrieved store is made. The visual input would be stored momentarily without any translation. This store would be retrieved and translated into verbal response. Since language acquisition is developmental and since linguistic assimilation precedes linguistic production, the verbal input-nonverbal output task is easier than the nonverbal input-verbal output task. In the verbal input task a substantial amount of information is translated into nonverbal form. After the initial translation this task becomes identical to a pure nonverbal task. In the verbal description output mode restrictive linguistic form development is operative and imposes its corresponding developmental constraints. Hence the ordering of the mixed mode tasks can be explained on the basis of nonverbal information storage.

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Television as a Language Training Medium with Retarded Children

Sebastian Striefel

TV has received little exploration as a medium for training retarded children in language or general functions. The success of Sesame Street with children of normal abilities raises the question of whether a similar approach might benefit retarded children. Casual observation indicates that institutionalized retarded children sit in front of a TV set for several hours a day.

Three groups of ten subjects each were exposed for 1 hour per day to the following three kinds of programs on different days: Sesame Street, cartoons, and a blank screen. The results indicate that even severely and profoundly retarded children discriminate between the presence of a program and a blank screen.

With the use of behavior modification techniques, it should be relatively easy to develop methods for increasing the percentage of time retarded children keep their eyes focused on the TV screen. TV programs could be designed specifically to provide appropriate language models and functional content for institutionalized children. Development of videotape programs could result in a very economic and efficient language-training program by requiring less time from the professional staff. Simultaneously, the program would reach a larger number of children than is possible if face-to-face training is used.

The development of videotapes for nationwide viewing would provide a method for training most retarded children in the community and home rather than in institutions. Initial programs would need to be developed with language training goals clearly specified. Continual evaluation, modification, and packaging of programs for dissemination to others would be necessary thereafter. During the initial programs, close supervision of the retarded children would be necessary. Parents of retarded children could use similar procedures in the home if these program tapes were made available via educational TV. A guide book or preliminary sections of the video programs might be necessary to inform the "teacher" about the techniques to be used for training.

Through TV, one may train both individuals and groups. The most severe limitation of TV is that it is not sensitive to a child's behavior. This limitation could be alleviated by using a combination of closed circuit TV and a parent or aide untrained in language functions.

The greatest potential of TV may be in programing the stimulus side of language or other training procedures. For example, in conducting verbal training, one could use the person who has the best enunciation for preparing the videotapes. In addition, the stimuli would be constant on all presentations.

A comparison is being made between live and videotape models. These models provide opportunities for motor imitation. Preliminary results indicate that children imitate the motor behavior of both the live and TV model. The success of this pilot work suggests that TV has great potential value for training retarded children in the area of language.

TV can be used for the training of motor imitations by presenting the

model via videotape and having a "teacher" using behavior modification techniques work with small groups of children. The video model could say "do this" and then raise his arm and hold it there. Reinforcement (social, edible, or a token which could be traded for something else later) would be provided if the correct behavior was emitted. If the correct behavior did not occur, the "teacher" would raise the child's hand and then deliver the reinforcer. After the child had gained some skills in imitating, the behaviors modeled could become more complex.

We have found that retarded children will also obey commands given by a videotape model. Procedures are now being developed to shift the control of motor behavior from a modeled behavior to the appropriate verbal discriminative stimulus. For example, the model may say, "Do this; pick up the glass," and then pick up the glass. If the subject imitates, he is reinforced. The model gradually fades out his physical prompt until all that remains is the verbal cue. If the child performs the behavior in the presence of only the verbal cue, receptive control of that behavior has been achieved.

It would seem likely that some nonverbal severely retarded individuals could be conditioned to make verbal imitations. This could be accomplished by providing the verbal stimuli via TV and having an adult with the child to deliver reinforcers using a successive approximations technique. For example, the model might say, "Do this; say 'ah.'" Later a blending of sounds into words could be presented. After the child imitates a number of words, these could be combined into phrases and then sentences.

After verbal imitation has been used to establish a vocabulary, control might be shifted from the verbal model to the actual object for which the word is a symbol. Labeling of physical objects and colors would probably be the easiest for the subject to learn. The videotapes could present items which correspond to the words the subject learned in the verbal imitation phase. The model could present an item and say, "This is a ball. (pause) What is this? (pause) Say 'ball.'" All correct responses would be reinforced immediately. After the child has learned to identify various items by name, he could be taught colors. For example, the model might say, "This ball is red. (pause) What color is this ball? (pause) Say 'red.'" Color training could progress until the subject could pick out items of various colors on request and answer questions on color.

Progressing in this fashion, the subject could be taught the appropriate labels for phrases such as "red ball." One could teach the child the concepts of size, shape, pluralization, actions, and more complex aspects of language, such as syntax and semantics.

It seems fair to say that there is enough data available to indicate that TV is a feasible medium for some areas of language training. It seems apparent that the potential of TV as a training medium is limited mainly by the imaginativeness of those who plan the training programs.

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Reprints of original article from Sebastian Striefel, Ph. D., Research Associate, Bureau of Child Research, Parsons State Hospital, Parsons, Kans. 67357.

A Communication Workshop for Parents

Jane Landsbaum Brownstone and Carol J. Dye

Most mental health centers do not have the facilities to provide therapy for all the families seeking help. To offset that problem, in March 1969, St. Vincent's Psychiatric Hospital in St. Louis began a series of structured workshops which we conduct for the parents of adolescent inpatients. We also present individual workshop sessions to other parents at schools and churches.

The workshops are designed to show the parents how to communicate more effectively, help them analyze and identify their own communication patterns and the way in which they deal with their youngsters, and provide them with alternative methods, if necessary.

In the first session we tell the parents that although each session is planned in advance, their interests and concerns will shape the discussions. As a warmup exercise the parents are encouraged to briefly summarize their major concerns about their adolescents. That gives them an opportunity to share their problems and provides us with relevant material for later sessions. The parents' major concerns typically include curfews, drugs, undesirable friends, dress codes, running away, responsibility, trouble with the law, promiscuity, apathy, depression, and general uncommunicativeness.

We then ask the couples to define their goals as parents by listing the characteristics they want to help their children develop. Each parent group has evolved a similar list of valued traits, including self-confidence, reliability, compassion, independence, sensitivity, resilience to failure, productivity, a sense of humor, and optimism. It is interesting to note that the same characteristics have been selected not only by middle-class parents but also by a group of mothers from an inner-city area. The list of characteristics are prominently displayed at each meeting, so that parents can see the inconsistency between their expressed goals of independence for their children and the communication methods that are likely to foster the opposite behavior.

Next we present a brief lecture on how communication can be used to accomplish the parent's goals. We use role-playing to show how effective interchange can be broken down by several common communication errors, such as mixing fact and opinion, sending contradictory messages, and failing to make sure the message sent is the same as the one received.

The parents are then divided into task groups of four or five members each and are asked to develop a list of communication guidelines for the speaker (the sender of messages) and the listener (the receiver of messages). After they have worked on the guidelines, the parents meet together again and discuss what they have written. One of us keeps a written record of the suggestons made so that the parents can refer to them in later sessions.

At the close of the first session, we give each couple two sets of questionnaires to be filled out during the week, one set by them and the other by their adolescents. The questionnaires, which ask comparable questions of both the parents and the adolescents, indicate how communication is perceived by each of them.

The second session begins with a review of the communication guide-

lines that were developed in the first meeting. Together we and the parents determine from the list their communication strength and weaknesses, and in later sessions discussion is focused on them.

The parents compare the results of the communication questionnaires that they filled out during the week. The discrepancies in responses by parents and adolescents, especially on issues of parental trust and interest in the adolescents' actvities, are frequently surprising to parents; sex and adolescents' independence are usually cited as the most difficult topics for family discussion.

The remainder of the second session is spent developing effective listening skills so that the parent can better understand their adolescents' complaints about family communication. We show them how to paraphrase what is being said, how to acknowledge their own feelings, and how to ask questions in a nonintrusive manner. The parents then practice what they have been shown.

At the end of the session we ask each couple to examine with their adolescents one of the specific areas of disagreement that was indicated in their questionnaires.

During the third session, the parents analyze several communication styles to determine which approach is best for accomplishing the goals they established earlier. Those approaches include authoritarian, inconsistent, overprotective, and creative or problem-oriented styles. Usually the session is lively, and the parents respond to the role-playing with a combination of humor, insight, and defensiveness, especially when they recognize some of their own methods for handling problems.

At the close of the session, the parents summarize what they think we were trying to tell them. We give them copies of Rokeach's value survey, which they and their adolescents are to fill out between sessions so that they can better understand their differences in values.

The fourth and fifth sessions are less structured, thus allowing the parents to apply what they have learned in the three sessions to their own specific problems. The couples are encouraged to act out problem situations that have occurred in their homes, and then we and the other parents suggest appropriate solutions. We usually find that most of them have become more sensitive to their communication style and to the specific communication errors they tend to make, and thus have initiated steps to improve their communication approach. The parents' last task is to give a written and verbal examination of the workshop.

As a whole the parents have been enthusiastic about the workshop, indicating that their time was well spent, that the sessions were interesting, and that they were learning something. And finally, many of the parents indicated that the workshop sessions had a preventive value, helping them to reach their younger children.

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